

~~6) (twice amended) A pipe as claimed in Claim 1, further comprising heat insulation means placed on at least the rigid riser part and/or the flexible riser part.~~

~~7) (twice amended) A pipe as claimed in Claim 1, characterized in that said rigid riser part is held up to the floating support by holding means (9) allowing said pipe to be tensioned under the effect of its own weight.~~

~~8) (twice amended) A production riser or riser pipe as claimed in Claim 1 wherein the pipe is a production riser or riser pipe for effluent transfer from a production well to a floating support.~~

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~~9) (twice amended) A pipe as claimed in Claim 1, wherein the pipe is an injection pipe or line and characterized in that the rigid riser part is connected to a source of fluid to be injected and the flexible riser part is connected to a point where the fluid is to be injected.~~

~~10) (twice amended) A system for producing petroleum effluents in great water depths allowing fluid transfer between a floating support and a source of effluents, characterized in that the system comprises at least one or more risers and/or one or more injection lines, and wherein each of the one or more risers and/or one or more injection lines is a pipe as claimed in Claim 1.~~

~~11) (twice amended) A system as claimed in claim 10, further comprising a catenary anchor system (10) applied to the rigid~~

B 2 ~~riser part in the vicinity of the junction and/or of connector~~
~~(8) between flexible riser part (7) and rigid riser part (6).~~

~~12) (amended) A production system as claimed in Claim 10,
further comprising additional means for tensioning the riser(s).~~

Please add the following new Claims 13 - 15:

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13) A method of designing a pipe as claimed in claim 1 for use in conveying a particular fluid, and for use in a body of water that exerts stresses on the pipe and the floating support due to wave motion, current and wind, the stresses thereby causing motions in the pipe and/or the floating support, and wherein the flexible riser part will have a definable internal pressure resulting from the conveying of the particular fluid, a definable external pressure resulting from the water depth, a definable maximum traction resulting from stresses from the body of water, and a definable maximum allowable curvature, resulting from the composition of the flexible riser part, and wherein the rigid riser part has a defined holding means wherein it can be connected inside or on an edge of the floating member without coming into contact with the floating member, and wherein the rigid riser part has a defined diameter, and wherein the rigid riser part is subject to stresses generated by the weight of the pipe, the suspended weight of the flexible part, hydrodynamic strains, strains induced by displacements of the floating support, inside pressures and outside pressures,
the method comprising the steps of
A) defining the flexible riser part by the steps of

a) determining the extreme motions that the floating support would be subjected to in the body of water and assuming that the extreme motions at an end of the flexible riser part where it is connected to the rigid riser part are substantially identical to the extreme motions of the floating support, and
b) selecting a point (Ph) along a vertical axis that coaxial to the axis that the rigid riser will have when the rigid riser is connected to the floating support, wherein the first point (Ph) is closer to the bottom of the body of water than to the top of the body of water and determining whether the point (Ph) can serve as the location where the flexible riser part is connected to the rigid riser part, the determining taking into account the extreme motions that the end of the flexible riser part where it is connected to the rigid riser part would be subjected to, as determined by step (a), and further taking into account the inside pressure, the exterior pressure, the nature of the fluid, the maximum traction of the flexible riser part and the maximum allowable curvature, wherein, if point (Ph) cannot serve as the location where the flexible riser part is connected to the rigid riser part, the step (b) is repeated with one or more additional points, until a point is found that can serve as the location where the flexible riser part is connected to the rigid riser part,

B) defining the rigid flexible part by the steps of
a) selecting the length of the rigid riser part so that the length is substantially equal to the value of the distance, under equilibrium conditions, between the upper end of the flexible riser and the holding means, so that length of the rigid riser part is at least equal to half the depth of the water depth,

- b) selecting the thickness of the rigid riser part by taking into account stresses generated by the weight of the pipe, the suspended weight of the flexible part, hydrodynamic strains, strains induced by displacements of the floating support, inside pressures and outside pressures, and
- c) checking that the rigid riser part when the rigid riser part is connected by the holding means inside or on an edge of the floating support, the rigid riser part does not come into contact with the floating support, and wherein if the rigid riser part does contact the floating support, steps A) and B) are repeated with different values for the point (pH).

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- 14) The method of claim 13, wherein steps A) and B) of defining of the flexible riser part and the rigid riser part are carried out under static conditions.
- 15) The method of claim 14, wherein the outcome of steps A) and B) of defining of the flexible riser part and the rigid riser part under static conditions is checked by means of dynamic dimensioning stages.
- 16) The method of claim 13, wherein steps A) and B) of defining of the flexible riser part and the rigid riser part are carried out under dynamic conditions.